REMARKS

Status of claims:

Claims 1-10 are present for examination.

Obviousness Rejection:

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemitsu (U.S. Patent Number 5,485,279) and Matsushima (U.S. Patent Number 5,453,788) in view of Kim (U.S. Patent Number 6,104,753).

With respect to claims 1-10, as amended, the rejection is respectfully traversed.

Independent claim 1, as amended, recites a method for displaying frames of a dynamic image using single field data from an interlaced encoded image data having a two-field structure, comprising the steps of:

> "performing inverse quantization of the interlaced encoded image data to obtain DCT (Discrete Cosine Transform) coefficients of each of a plurality of field blocks that comprise a frame;
>
> to half the size of the DCT coefficients and for each frame, selecting only one, but not both, of two fields that form the frame, each selected field consisting of selected field blocks;
>
> doubling the size of the DCT coefficients of each selected field block in each selected field by adding high frequency components in order to obtain compensated DCT coefficients having a data size corresponding to a frame block;
>
> performing inverse DCT of the compensated DCT coefficients to obtain image data corresponding to said frame block; and
>
> displaying the image data." (Emphasis Added).

A method including the above-quoted features has the advantage that for each frame of an image, only one, but not both of two fields that form the frame is selected, where each selected field consists of selected field blocks. Then, the size of the DCT coefficients of each selected field block in each selected field is doubled by adding high frequency components in order to obtain compensated DCT coefficients having a data size corresponding to a frame

block. Such a method addresses the problem that there may be a time lag, such as 1/60 second, between the two fields in each frame, and if the motion of the images is large and both fields are used to form scanning lines for the images, then the quality of the images will be lowered and the images may become indistinct. By using only one, but not both, of the two fields to form the images, there is no time lag between scanning lines, so the images reproduced can be clear even if the motion of the images is large or fast. Also, by adding high frequency components to double the size of the DCT coefficients of each selected field block, it is possible to reproduce image data having the same size as the original image. (Specification; page 7, line 23 to page 9, line 4).

Neither Yonemitsu, Matsushima, nor Kim, alone or in combination, disclose or suggest a method including the above-quoted features. The Examiner recognizes that, "Yonemitsu and Matsushima do not specifically disclose 'to half the size of the DCT coefficients and for each frame, selecting only one, but not both, of two fields that form the frame, each selected field consisting of selected field blocks'". The Examiner then points to Kim and states that, "Kim teaches the decimation of the frame to half the size of the DCT coefficients and for each frame, selecting only one, but not both, of two fields that form the frame, each selected field consisting of selected field blocks (see figs. 10 and 11 and col. 8, ln. 43-57; note in figs. 10 and 11, the size of the DCT coefficients are halved for each frame, in that the size goes from 8x4 to 4x4, and as seen in flowchart of fig. 12, there is only one, but not both, of two fields is selected as step S45 decimates even lines of the frame to form a selected field which consists of field blocks)."

However, Kim does not disclose or suggest selecting only one, but not both, of two fields that form a frame. In the video decoder circuit of Kim, when an interlace scanned image having a two field structure, including an even field and an odd field, is decoded, **both** the even field and the odd field are used to determine the decoded data. In the first embodiment of the video decoder circuit of Kim, the even lines of the even field and the even lines of the odd field are removed, and the resulting fields with the decimated lines are used to determine the decoded data. (Kim; column 7, lines 10-15; column 8, lines 45-47; column 9, lines 4-53). Such a process of removing even lines from both an even field and an odd field is shown in figure 7 of Kim. From figure 7 of Kim, it can be seen that the video decoder

circuit of the first embodiment of Kim uses lines from both an even field and an odd field when decoding data that has a two field structure. (Kim; FIG. 7).

The Examiner points to step S45 of figure 12 of Kim as showing that only one, but not both, of two fields is selected. However, the Examiner seems to be confusing lines with fields. If an image with a two field structure is decoded in the first embodiment of Kim, then in step S45 of figure 12 of Kim, the even lines for a field are decimated. (Kim; column 9, lines 4-53). The even lines for both the even field and the odd field are decimated, and the resulting fields with decimated lines are used to determine decoded data. (Kim; FIGs. 7 and 11; column 7, lines 10-15; column 9, lines 4-53).

Similarly, in the second embodiment of the video decoder circuit of Kim, when an image is an interlace scanned image having a two field structure, **both** the even field and the odd field are used for obtaining display lines. (Kim; column 10, lines 51-56). In the second embodiment, Kim teaches that even lines should be removed from even fields and that averages of adjacent even lines and odd lines should be used for decimating odd fields. (Kim; column 13, lines 47-54; column 14, lines 51-56; column 15, lines 1-65). A example of such a decimation is shown in figure 21 of Kim, where it can be seen that even lines of even fields and averages of even lines and odd lines of odd fields are used for the decimation of the fields. It can also be seen in figure 21 of Kim that both the even field and the odd field are used for determining decoded data. Therefore, Kim neither discloses nor suggests selecting only one, but not both, of two fields that form a frame to half the size of DCT coefficients.

Furthermore, both Kim and Yonemitsu teach that 8x8 DCT coefficients should be decimated by ½ in both the horizontal and vertical directions to produce 4x4 DCT coefficients of ¼ the size. (Kim; abstract; FIG. 11; column 4, lines 14-21; column 7, lines 3-5; column 8, lines 12-38) (Yonemitsu; abstract; FIG. 15, references 82, 83, 91, 92, 93; column 4, lines 1-11; column 18, line 53 to column 19, line 12). Thus, even if the size of the DCT coefficients in the systems of Kim and Yonemitsu were doubled by the process of Matsushima, the resulting DCT coefficients would not have a data size corresponding to a frame block, but would have a data size of ½ of a frame block. Such a result occurs, because doubling the size of DCT coefficients that have been reduced to ¼ the size of a frame block

only produces coefficients of ½ the size of a frame block. In contrast, a method including the above-quoted features allows for doubling the size of DCT coefficients of each selected field block in order to obtain compensated DCT coefficients having a data size corresponding to a frame block. (see Applicant's FIG. 3).

Therefore, independent claim 1, as amended, is neither disclosed nor suggested by the cited prior art and, hence, is believed to be allowable.

Independent claim 3 recites a method for displaying frames of a dynamic image with features similar to features of the method for displaying frames of a dynamic image of independent claim 1. Therefore, independent claim 3 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

Independent claim 5 recites an apparatus for displaying frames of a dynamic image with features similar to features of the method for displaying frames of a dynamic image of independent claim 1. Therefore, independent claim 5 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

The dependent claims are deemed allowable for at least the same reasons indicated above with regard to the independent claims from which they depend.

Conclusion:

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to

Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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